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Received - 2021-08-16 03:02:14 PM
Control Number - 52373
ItemNumber - 50

PROJECT NO. 52373

REVIEW OF WHOLESALE MARKET	**§**	**PUBLIC UTILITY COMMISSION**
DESIGN	**§**	
	§	**OF TEXAS**

THE ADVANCED POWER ALLIANCE COMMENTS

The Advanced Power Alliance submits the following response to the request for comments on questions and the discussion draft issued by the Public Utility Commission of Texas (Commission) in Project 52373: *Review of Wholesale Market Design*. The comments submitted do not reflect the opinions of any individual member company.

I. EXECUTIVE SUMMARY

- Winter Storm Uri brought record setting cold weather throughout Texas affecting generation across all fuel types. ERCOT suffered an unprecedented level of forced generation outages as a new winter record peak demand was set and the largest interruption of load in U.S. history occurred. However, the February event was neither an installed capacity shortage problem nor was it an ancillary services problem.
- Any market design initiatives that shift reliability costs to renewable generators does nothing to solve the issue of reliability or cure the problems that arose during Uri. Solutions should be aimed at solving the problems identified.
- Natural gas and renewable resources have proven to provide symbiotic benefits to all Texans: Renewable energy provides a financial hedge to gas price volatility and natural gas generators provide a physical hedge to renewable intermittency.
- We urge the Commission to be mindful of discriminatory policies that change cost allocation methodologies to any specific fuel type. Shifting or adding costs to renewable resources will significantly undermine an important segment of the Texas economy that has already invested more than $70 billion in the market and disrupt power purchase agreements that are difficult if

not possible to amend, that many of America's Fortune 500 companies have executed with renewable energy providers to meet their energy sustainability goals and to ensure low-cost supply.

- The allocation of reliability costs to renewable generators will undermine the economic viability of existing renewable projects, lead to higher prices for consumers, disrupt regulatory certainty, and create a chilling effect that will extend to all forms of capital-intensive power generation investment that rely on long-term returns.
- APA member companies urge the Commission to adopt solutions that are rational, non-discriminatory and technology neutral while continuing to foster investment in a more reliable, resilient, and affordable Texas grid.
- APA suggest the Commission focus on a suite of policies that incentivize firm supply delivery of fuel to capacity, while incentivizing reliability performance from the best technology, without picking winners.

II. INTRODUCTION

The Advanced Power Alliance (APA) serves as the voice of member companies that represent a diverse cross-section of the world's leading energy companies, energy investors, energy consumers and power generation manufacturers from across the clean power sector that are driving high-tech innovation through the development of generation assets including wind, solar and energy storage spurring massive investment in the U.S. Economy while creating jobs. Projects developed by our member companies and investors generate local tax revenue and multi-generational income for Texas landowners.

Winter Storm Uri brought record setting cold weather throughout Texas during the week of February 14, 2021, which affected generation across all fuel types, including thermal and renewable units. ERCOT suffered an unprecedented level of forced outages as a new winter record peak demand was set and the largest interruption of load in U.S. history occurred. However, the February event was neither an installed capacity shortage problem nor was it an ancillary services (AS) problem. While APA member companies share the State's desire to address the challenges facing the Texas electric grid, we are increasingly concerned with the false narrative by some to blame renewable generation intermittency while failing to take a comprehensive view of the events and call for policies that will not only harm existing renewable investments but will likely deter such future investments. While demand continues to increase, it is essential that renewable generation remain an active and growing part of the Texas electric grid to continue to provide low cost and reliable power. Texas has long enjoyed a reputation as an energy superpower maximizing its resources as part of an all-of-the-above approach to energy production and delivery. Natural gas and renewable resources have proven to provide symbiotic benefits to all Texans: Renewable energy providing a financial hedge to gas price volatility (including recent gas price increases), and gas generators providing a physical hedge to renewable intermittency. Any market design initiatives that shift reliability costs to renewable generators does nothing to solve the issue of reliability or cure the problems that arose during Winter Storm Uri and will not reduce consumer costs.

APA urges the Commission to be mindful of discriminatory policies that change cost allocation methodologies to any specific fuel type. Shifting or adding costs to renewable resources will significantly undermine an important segment of the Texas economy that has already invested more than $70 billion in the market and disrupt power purchase agreements that are difficult if not impossible to amend, that many of America's Fortune 500 companies executed with renewable energy providers to meet their energy sustainability goals and to ensure low-cost supply. The allocation of reliability costs to renewable generators will undermine the economic viability of existing renewable projects, jeopardize off-take agreements and supply contracts and threaten the financial viability of resource projects under construction which are expected to provide peak-aligned resource margin to the system benefiting all customers. It will reduce regulatory certainty sending a strong message to Wall Street and the investment community at large that Texas is no longer a state that fosters the regulatory certainty necessary to promote competitive power generation development in the energy-only market and therefore lead to an outflow of investment dollars to other states at the very time when the Commission has said it wants to attract investment dollars to the state. This is contrary to Texas pro-market business stance and inconsistent with Texas' competitive energy market design. Shifting costs from one generator to another does nothing to improve the stated goal of increasing reliability. It will simply devalue the existing renewable generation fleet in Texas and ultimately lead to higher prices for consumers.

For more than twenty years, energy policies in Texas have encouraged a competitive market that attracts a diverse mix of energy resources based on their ability to provide electricity at a competitive price. Since the beginning of the competitive market, older less efficient generation resources have been replaced with newer, cleaner, more efficient technologies. This is one of the recognized benefits of the restructured electricity market. Renewable energy companies have invested over $70 billion in Texas, more than any other state in the nation because of the current regulatory framework coupled with Texas incredible native energy resources such as natural gas, wind and solar. The high level of renewable energy generation has contributed to lower overall market prices for energy and has effectively provided a fuel-price hedge helping to offset the higher, variable costs of thermal generation. Texas consumers have been one of the primary beneficiaries of the current market structure.

Renewable energy development has had a positive economic impact in Texas, particularly in rural counties. According to a study conducted by Dr. Joshua Rhodes titled: "The Economic Impact of Renewable Energy in Rural Texas", over their lifetime, the current fleet of utility-scale wind and solar projects in Texas will generate between $4.7 billion and $5.7 billion in new tax revenue to local communities and will pay Texas landowner royalty payments between $4.8 billion and $7.3 billion over the lifetime of the projects. If projects with signed interconnection agreements are built, existing and planned utility-scale wind and solar projects will pay between $8.1 billion and $10 billion in total tax revenue over their lifetime and between $8 billion and $13.1 billion in royalty payments directly to Texas landowners. Renewable energy projects are a major source of revenue for counties and schools and create multi-generational wealth. Shifting the cost of reliability to renewable generation owners is punitive, discriminatory and will place the tax revenue streams currently paid to local communities and royalty payments to landowners at risk.

APA members urge the Commission to adopt solutions that are rational, non-discriminatory and technology agnostic while continuing to foster investment in a more reliable, resilient, and affordable Texas grid.

III. RESPONSE TO QUESTION NUMBER 1

Question 1: *What specific changes, if any, should be made to the Operating Reserve Demand Curve (ORDC) to drive investment in existing and new dispatchable generation? Please consider ORDC applying only to generators who commit in the day-ahead market (DAM). Should that amount of ORDC-based dispatchability be adjusted to specific seasonal reliability needs?*

The Operating Reserve Demand Curve (ORDC) is designed to properly incentivize and compensate reserves and energy during scarcity conditions. Resource owners only get paid the price adders resulting from the ORDC if they are offering in their energy during times of scarcity. The ERCOT energy only market design with the ORDC is working well. Additional gas fired capacity, wind power capacity, solar powered capacity, Energy Storage Resources, and Distributed Generation Resources are being rapidly added to the fleet of resources available to serve load in ERCOT. All resources capable of providing energy during scarcity should continue to be eligible for ORDC payments. So long as ERCOT market structures remain stable, investors will likely be willing to finance new resource additions. APA suggests the Commission focus on a suite of policies that incentivize firm supply delivery of fuel to capacity, while incentivizing reliability performance from the best technology, without picking winners.

IV. <u>RESPONSE TO QUESTION NUMBER 2</u>

Question 2: *Should ERCOT require all generation resources to offer a minimum commitment in the day-ahead market as a precondition for participating in the energy market?*
a. If so, how should that minimum commitment be determined?
b. How should that commitment be enforced?

APA does not believe there is a reason to require a new "must-offer" requirement in the ERCOT Day Ahead Market (DAM). Any changes could lead to unintended consequences that will impact market entrants and long-standing business models.

The DAM and Real Time Market (RTM) are voluntary financial markets, as such, there is essentially no commitment to provide capacity and should remain so. A must- offer policy would not likely provide any additional capacity. Rather, more capacity would be offered into the DAM causing the clearing price to be less than the DAM without a must-offer requirement. Those resources already participating would receive less revenue thereby changing business evaluations. Additionally, if a must-offer requirement is imposed, the outcome would likely be less capacity available to serve load in the

RTM. This is a counterproductive means to meet the objective of reliably serving load in the most economical way.

Under ERCOT's current market design, resource owners make an economic/risk assessment to determine the amount of capacity to offer into each hour of the DAM. If there is a must- offer requirement, then the market choices will no longer be a proper balance of risk and economic reward. Current market participants will have non-economic outcomes and potential future entrants into the ERCOT market will have to add the must-offer requirement to their evaluation of their willingness to build new capacity in ERCOT. If the Commission reverses its long-standing policy of not implementing a must-offer requirement and applies that reversal to existing market participants, the Commission will create huge concerns about lack of stability in the ERCOT market rules which is likely to have a significant negative effect on future decisions to invest in the ERCOT market.

APA suggests a better alternative is to request more visibility and updates to ERCOT planning criteria to accurately capture system needs. Member companies have shared instances of large variances between DAM and RTM constraints that impact ability to move power to load areas. If additional capacity is the need, then a thorough examination of planning would be beneficial.

a. If so, how should that minimum commitment be determined?

Given that APA sees no value in instituting a new must offer requirement in the DAM which would reduce the value of the DAM and likely result in less capacity available to serve load in the RT market, APA has no opinion of how the minimum commitment should be determined.

b. How should that commitment be enforced?

*S*ee the answer to a. above. If such an unsettling policy reversal were adopted, several enforcement options would likely be available, and they would likely be straightforward.

V. **RESPONSE TO QUESTION NUMBER 3**

Question 3: *What new ancillary service products or reliability services or changes to existing ancillary service products or reliability services should be developed or made to ensure reliability under a variety of extreme* *conditions? Please articulate specific standards of reliability along with any suggested AS products. How should the costs of these new ancillary services be allocated.*

As noted above, the February event was not an installed capacity shortage problem nor was it an ancillary services problem. Although all generation resources were impacted, it was primarily a failure of gas-fired generation to stay online due to their own equipment problems as well as the problems encountered by their natural gas suppliers. This was further exacerbated in a significant way by coal-fired and nuclear-powered generation outages and to a much lesser extent to forced outages of wind and solar power. The impact of the event on consumers was dramatic because of the amount of generation lost forcing ERCOT to order a significant large interruption of load. Given that ancillary service products were not the root cause of the issues arising from the February event, there does not seem to be a reason to modify or add to the existing array of Ancillary Services. However, if such changes are contemplated, ERCOT staff and ERCOT stakeholders have a long history of reviewing ancillary service performance, anticipating future ancillary service needs, and investigating possible improvements prior to adopting significant changes in Ancillary Service products and design.

APA requests that the Commission consider vetting new Ancillary Service product recommendations in ERCOT market forums to avoid unintended consequences. As a fundamental matter, the PUCT should endorse the principle that any new product must be designed with a forward view of reliability needs to provide certainty over operations and preserve price signals driving future investment.

VI. <u>RESPONSE TO QUESTION NUMBER 4</u>

Question 4: *Is available residential demand response adequately captured by existing retail electric provider (REP) programs? Do opportunities exist for enhanced residential load response?*

APA has no response to this Question at this time.

VII. <u>RESPONSE TO QUESTION NUMBER 5</u>

Question 5: *How can ERCOT's emergency response service program be modified to provide additional reliability benefits? What changes would need to be made to Commission rules and ERCOT market rules and systems to implement these program changes?*

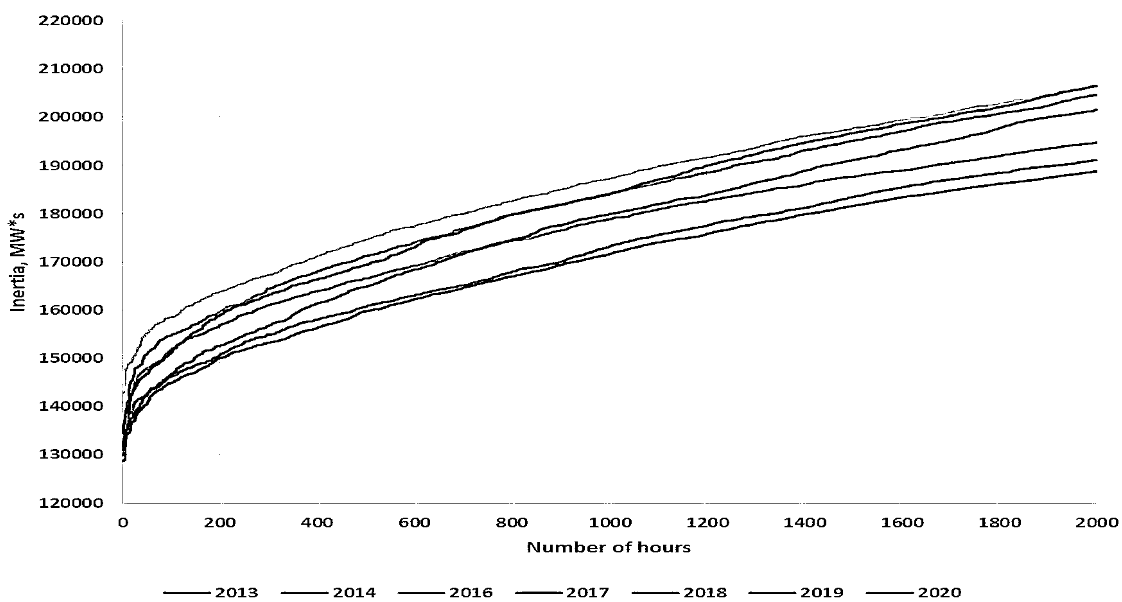
APA has no response to this Question at this time.

VIII. RESPONSE TO QUESTION NUMBER 6

Question 6: *How can the current market design be altered (e.g., by implementing new products) to provide tools to improve the ability to manage inertia, voltage support, or frequency?*

a. Inertia

There are two Ancillary Services already available to ERCOT to address the potential for low inertia. First and foremost is the use of Responsive Reserve Service (RRS) purchases. ERCOT's current procedures call for purchasing RRS based on studies that would capture periods of low inertia and purchase additional RRS capacity and thus increase the inertia on the system to acceptable levels. This would occur during periods of low load and high production from renewables; thus, there should be available offline capacity willing to come online to obtain the RRS payment. ERCOT wishes to maintain inertia above 100 MW*seconds. As the chart below demonstrates, there are very few hours when inertia is low and none where it approaches the 100 MW*seconds limit. It certainly is possible that inertia will be lower in the future; clearly only a few hours a year will be involved for the foreseeable future.



There is a new Ancillary Service that can help improve the system response during periods of low inertia, namely Fast Frequency Response Service (FFRS). This service requires a very fast response to frequency decay at a set frequency. The responding resource must be able to maintain the response for 15 minutes but may then reduce its response after that time. This service is designed to "catch" fast falling frequency events and allow time for slower responding ASs to respond. The effect of having this new service will be to reduce the minimum allowable inertia to less than 100 MW*seconds. FFRS can be provided by resources (likely only Energy Storage Resources (ESRs)) and loads that have their relays set to respond at the specified frequency and that can respond as fast as required. The current design of the service limits the amount that may be purchased by ERCOT and includes the FFRS purchased capacity as part of the Load Acting as a Resource (LAAR) portion of RRS. As a result, the compensation has not been enough to get any substantial participation in the new service. ERCOT and market participants have been discussing alternative designs of the FFRS service to incentivize participation. As previously noted, there is no immediate need for the service since low inertia is not yet an issue so there is time to make the needed adjustments. The ERCOT stakeholder process can serve as a forum for discussion these issues.

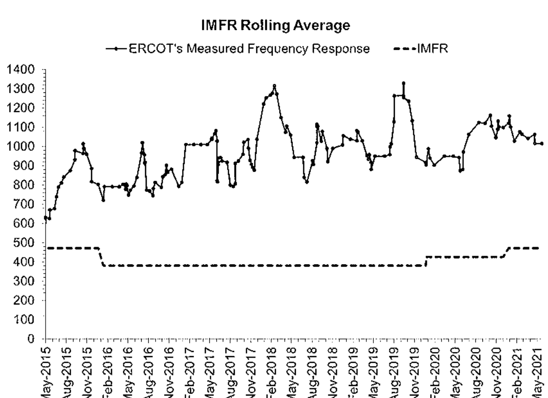
b. Voltage support

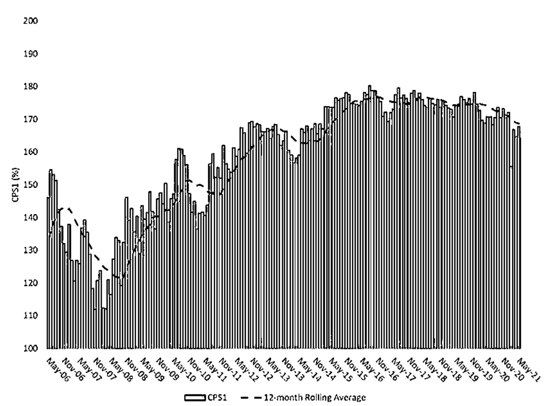
Voltage support is another Ancillary Service that generators of all types unquestionably provide but for which there is no compensation provided to the generator in ERCOT. In most, possibly all, other ISOs there are mechanisms of paying generators for reactive capability which is what provides voltage support. In ERCOT, when it was first unbundling around 1995, there was a PUCT proceeding intended to provide a mechanism to pay generators for voltage support just as it was beginning to be done in other regions. The methods used elsewhere and those proposed for ERCOT were arguable ridiculously expensive and not justified technically. Rather than developing a more rational compensation process the PUCT opted to set standards for the reactive support that must be provided by generators at one end and Distribution Service Providers at the other end with the Transmission Service Providers in the middle required to make for any needed additional reactive capability and voltage support. As things stand now, with minor exceptions and exemptions, all generators in ERCOT are meeting the standards adopted by the Commission and ERCOT.

Since the mid-1990s, there has been no effort to revisit the payment for voltage support issue. A good case can be made for the fact that generation providing reactive support and voltage control should be compensated in ERCOT. APA would support market participant discussions in ERCOT technical forums to revisit the issues around compensating generators for providing reactive support.

c. Frequency

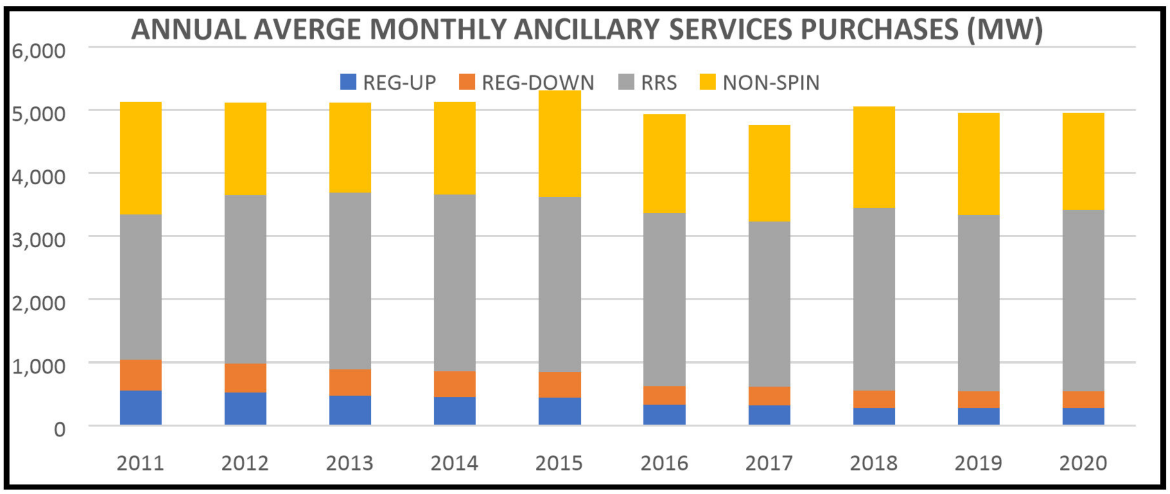
All existing ancillary services have a role in maintaining ERCOT's excellent frequency control. The main frequency control performance metrics dictated by the North American Electric Reliability Corporation (NERC) have been and continue to be excellent. The chart below on the left side helps evaluate the ERCOT response to conventional generation trips. The NERC mandated minimum response is shown as the dotted line. The ERCOT response is well above the requirement and has been improving throughout the period shown (2015-2021). The chart below on the right presents the "measure" of the second-by-second response to frequency deviations in the ERCOT system; the required response is 100 which is the bottom of the chart. Actual performance is well above the minimum routinely scoring above 170, the highest score possible is 200. This chart goes from 2009 to 2021 and one can see that in the earlier years, there was a disturbing trend. ERCOT market participants focused on educating conventional generation owners (primarily the new combined cycle owners) on the need to tune their control systems, train their operators, and to dedicate resources to increasing frequency control effectiveness in ERCOT; as one can see, the effort was successful.



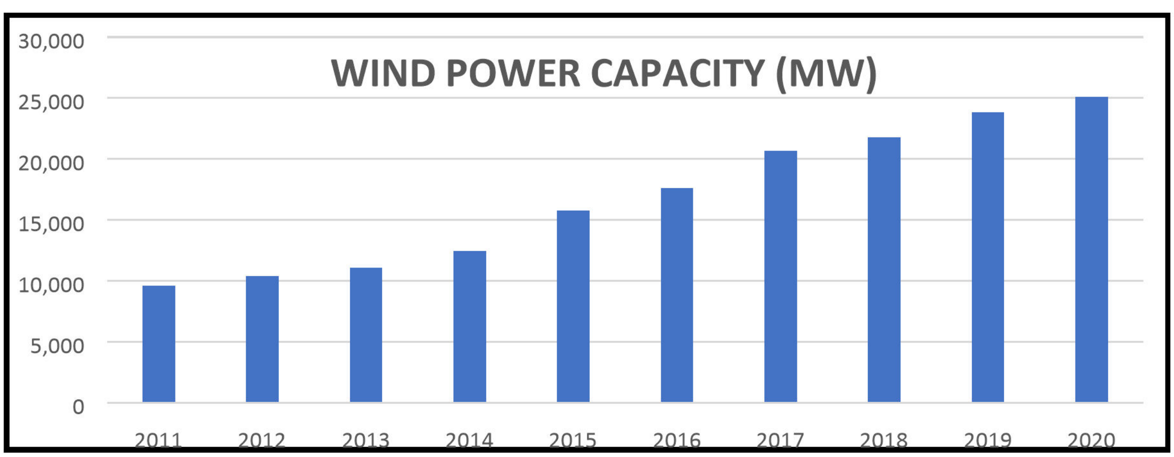


An important fact to consider is that during the last decade, as frequency response and reliability metrics were improving, there was explosive growth in wind-power development. Not only did reliability and frequency response not degrade, it improved in a measurable way. In fact, a part of the improvement shown on the chart on the right is likely due to the excellent response to frequency by wind power turbines. Due to the very fast response of wind turbines, there has been a measurable, large, and consistent improvement in frequency response, especially improved high frequency response.

It should be noted that none of the improvement of ERCOT's reliability and frequency control metrics came at the expense of ERCOT purchasing more Ancillary Services. In fact, for well over a decade ERCOT has been purchasing the same total amount of Ancillary Services as shown in the chart below and during the period of the zonal market.



Here again it is worth mentioning that during the 10-year period shown, the amount of wind power operating ERCOT grew from less than 10,000 MW to over 25,000 MW as the chart below shows.



There is absolutely no evidence that increasing amounts of wind power in ERCOT result in any increase in the purchases of ancillary services in ERCOT or the reduction in reliability or frequency control metrics.

When the charts are updated to include data for 2021, there will be a very noticeable increase in the ERCOT purchase of ancillary services. ERCOT has stated that the large additional purchases of Non-Spin and Responsive Reserve Service (RRS) are due to the uncertainty of conventional generators ability to perform as expected, not the false narrative that renewables have a substantial cause in disturbance. There are also additional purchase of regulation services, which is expected to be temporary, due to ERCOT's dispatch systems not properly accounting for upcoming solar powered generation. ERCOT has developed the necessary software to address the issue, it is in service, and ERCOT is carefully increasing the effectiveness of the new software.

IX. CONCLUSION

APA appreciates the opportunity to submit comments in this project and looks forward to working with the Commission as the market design project progresses.

Respectfully submitted,

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